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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,412	05/30/2001	Lawrence G. Clawson	3402.1000-001	7092
21005	7590	09/30/2004	EXAMINER	
HAMILTON, BROOK, SMITH & REYNOLDS, P.C. 530 VIRGINIA ROAD P.O. BOX 9133 CONCORD, MA 01742-9133			MERCADO, JULIAN A	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,412

Applicant(s)

CLAWSON ET AL.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-24, 45-57 and 60-65 is/are allowed.
- 6) ☒ Claim(s) 25-44 is/are rejected.
- 7) ☐ Claim(s) 40, 58 and 59 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10-3-03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

This Office action is responsive to applicant's amendment filed June 25, 2004.

This Office action is made NON-FINAL in view of the examiner's clarification on the teachings of the prior art. (of record)

Claim Objections

Claim 41 is objected to because of the following informalities:

- a. In claim 41 at line 2, "form" requires changing to --form--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The rejection of claims 1-65 under 35 U.S.C. 112, first paragraph has been withdrawn.

The rejection of claims 1-17 under 35 U.S.C. 112, second paragraph has been withdrawn.

Claim Rejections - 35 USC § 102 and 103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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Claims 25, 26, 28-35 and 39-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Chludzinski et al. (U.S. Pat. 4,473,622).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chludzinski et al as applied to claims 25, 26, 28-35 and 39-43 above.

The above rejections have been discussed in detail in the prior Office action. The examiner notes that Applicant's amendment to the present claims appear to have been submitted only to obviate the ground of rejection under 35 U.S.C. 112, first and second paragraph. The scope of the present claims are substantially similar if not identical to those considered in the prior Office action. Thus, the prior art rejections are maintained for the reasons of record.

Applicant's arguments appear to be specifically drawn to independent claims 25 and 28. Applicant submits that Chludzinski et al., allegedly unlike the present invention, does not humidify the fuel cell by injection of fuel cell coolant (emphasis as submitted) or by addition of water to the cathode air stream by equilibration with the fuel cell coolant. (emphasis as submitted) By this argument, it appears to the examiner that applicant is equating the claimed "evaporating heated cooling water" (claim 25) or "evaporating water" (claim 28) with a fuel cell coolant, in that applicant further asserts that the present method evaporates additional water into the air stream. However, the mere recitation of cooling water does not preclude a teaching by Chludzinski et al. of the presence of water in the exhaust air, formed in part by the "reaction

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product water formed at the cathode of the fuel cell”. (col. 4 line 49-50 and line 63-64)

Meanwhile, it is noted that the scope of claims 25 and 28 are absent of a feature drawn to injection of a fuel cell coolant, and evaporation of additional water into the air stream is limited solely to dependent claim 40. Notwithstanding, Chludzinski et al. also teaches introduction of liquid water as part of a coolant operation, “[l]iquid water enters cell and passes through the bipolar current collector between adjacent cells of the cell stack”. (col. 5 line 7-9) The examiner therefore maintains the position set forth in the prior Office action that heat from a fuel cell is used to make an air/steam mixture, “[t]he reaction air is then humidified by absorbing water from the exhaust via water transport membranes in the exhaust air economizer [31]”. (col. 4 line 48-50)

As to the exhaust directed to the fuel reformer in Chludzinski et al. not being the cathode exhaust, the examiner would like to clarify that in Chludzinski et al. the exhaust reaction air/steam mixture is in fact directed to the CO shift reactor section, “[s]ome of the steam exits the vaporizer over line 37 and feeds... CO shift reaction section”, “[t]he remaining steam which is generated by the exothermic reaction in CO shift reactor is fed to the free piston compressor and the compressor expander in section 4 to compress the reaction air”. (col. 5 line 17-23) Additional water is therefore considered to be introduced to the air/steam mixture after it has emerged from the fuel cell. (applies to claims 41-43)

Claims 27, 38 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chludzinski et al. as applied to claims 25, 26, 28-35 and 39-43 above, in view of Bloomfield (3,976,507).

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Arguments against Bloomfield appear to be directed to this reference failing to remedy alleged differences between Chludzinski et al. and the present claims. However, in view of Chludzinski et al. being maintained for the reasons discussed above, the rejection in view of Bloomfield is subsequently maintained for the reasons discussed in the prior Office action.

Allowable Subject Matter

Having satisfied the requirements of 35 U.S.C. 112, first paragraph, claims 58 and 59 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not teach or suggest the claimed heat exchanger that cools the exhaust after it leaves the expander.

Having satisfied the requirements of 35 U.S.C. 112, first paragraph, for the reasons set forth in the prior Office action claims 1-24, 45-57 and 60-65 are allowed.

Conclusion

The examiner acknowledges applicant's submission of documents AR-AS cited in the October 3, 2003 IDS. These documents have been considered as indicated by an endorsed Form PTO-1449.

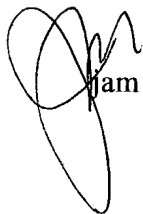
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



am



Patrick Ryan
SPE - AD Unit 1745